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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/850,203	05/08/2001	Yuji Saito	101213-00009	9728

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/850,203

Applicant(s)

SAITO ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-5, 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the communication filed on 11/1/05. Applicant's arguments have been considered, but are not persuasive. Claims 2-5 and 11-13 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/1/05 has been entered.

Claims Analysis

Claim 2 recites "said tubular casing and said electrolyte layer are integrally formed from a same material, said same material consisting of a high polymer solid electrolytic material", which is a product-by-process limitation. The method by which the casing and electrolyte layer are formed is not given patentable weight. Furthermore, the casing cannot consist of a high polymer solid electrolytic material because a circuit must connect the electrodes in order for the fuel cell to function.

As shown in Figure 3 of the present specification and described at paragraph [0030], lead 8 electrically connects the gas diffusion electrodes 3 associated with the passages 4 and 6 to each other, and connects them to an external circuit. Similarly, lead 9 electrically connects the gas diffusion electrodes 3 associated with the passages 5 and 7 to each other, and connects them to an external circuit. Thus, the casing must contain leads (interconnects) in order to retrieve the

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electrochemical power from the cell. The fuel cell must have an external circuit in order for the electrochemical reaction to occur. See also claim 13.

Claim Objections

Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-5 and 11-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Fuel cells require an external circuit for flow of electrons between electrodes. If the tubular casing consists of a high polymer solid electrolytic material, it is unclear how the specification enables the connection of the external circuit between electrodes.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2-5, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Zwick et al., US 4,499,663.

Zwick teaches a method of fabricating a monolithic core for a solid oxide fuel cell. The solid oxide fuel cell comprises cathode and anode materials sandwiching electrolyte material there between. The solid oxide fuel cell has a plurality of substantially parallel core passageways alternately having respectively the inside faces thereof with only the anode material or with only the cathode material exposed. The method consists of building up the electrolyte, anode and cathode materials by depositing each material individually. Each material deposit is sequentially applied for one cycle and where the depositing cycle is repeated many times until the material buildup is sufficient to formulate the core (abstract). A specific feature of Zwick is making the solid oxide fuel cell core by building up the separate material layers that form the core in a multiple step sequential manner with minute or thin deposits of each material being applied endwise to the wall that is being fabricated, or axially along the passageways being formed for confining the fuel and oxidant designed to flow through the fuel cell core (3:66-4:5). The method allows core passageway arrays of virtually any complicated cross sections to be formed (4:22-25). The complicated passageway core arrays extend axially (4:38-41). The fuel passageways are formed with only anode material defining the exposed passageway walls and the oxidant passageways are formed with only cathode material defining the exposed passageway walls (7:6-11). The electrode materials are applied in a material-layer-by-material-layer buildup (8:64) using a material discharging apparatus such as painting, spraying, vapor deposition or the like (9:17-19). In another embodiment of Zwick, the respective deposits of the

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cathode and anode by using the respective templates would be the same while the deposits of the electrolyte between the buildups of the cathode and anode might be by jet spraying (without the blocking templates) (10:5-13). The gas passageways have cross dimensions slightly less across the opening of the passageway (non-uniform) (9:48-61).

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zwick et al., US 4,499,663.

Zwick teaches a method of fabricating a monolithic core for a solid oxide fuel cell. The solid oxide fuel cell comprises cathode and anode materials sandwiching electrolyte material there between. The solid oxide fuel cell has a plurality of substantially parallel core passageways alternately having respectively the inside faces thereof with only the anode material or with only the cathode material exposed. The method consists of building up the electrolyte, anode and cathode materials by depositing each material individually. Each material deposit is sequentially applied for one cycle and where the depositing cycle is repeated many times until the material buildup is sufficient to formulate the core (abstract). A specific feature of Zwick is making the solid oxide fuel cell core by building up the separate material layers that form the core in a multiple step sequential manner with minute or thin deposits of each material being applied

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endwise to the wall that is being fabricated, or axially along the passageways being formed for confining the fuel and oxidant designed to flow through the fuel cell core (3:66-4:5). The method allows core passageway arrays of virtually any complicated cross sections to be formed (4:22-25). The complicated passageway core arrays extend axially (4:38-41). The fuel passageways are formed with only anode material defining the exposed passageway walls and the oxidant passageways are formed with only cathode material defining the exposed passageway walls (7:6-11). The electrode materials are applied in a material-layer-by-material-layer buildup (8:64) using a material discharging apparatus such as painting, spraying, vapor deposition or the like (9:17-19). In another embodiment of Zwick, the respective deposits of the cathode and anode by using the respective templates would be the same while the deposits of the electrolyte between the buildups of the cathode and anode might be by jet spraying (without the blocking templates) (10:5-13). The gas passageways have cross dimensions slightly less across the opening of the passageway (non-uniform) (9:48-61).

Zwick does not explicitly state at least one gas passage is formed by mis-registering of neighboring layers of material of the material deposits of the electrodes.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Zwick teaches virtually any complicated cross sections may be formed using the material-layer-by-material layer method (4:22-25). The complicated passageway core arrays extend axially (4:38-41). Therefore, Zwick at least suggests the claimed invention because it teaches a gas passage having virtually any complicated cross section may be formed. One of skill would have known that the method of Zwick could have been used to produce the mis-registered gas passageway of the claimed invention.

Response to Arguments

Applicant's arguments filed 9/22/05 have been fully considered but they are not persuasive. Applicant argues Zwick teaches the outer surface of the tubular solid oxide fuel cell includes electrolyte material, but a portion of the outer surface is formed by an interconnect material (different from electrolyte material). However, to the extent the claims are understood in view of the 35 USC 112 rejections and claims analysis section, this argument is not persuasive. Fuel cells must have an external circuit connecting the electrodes (interconnect) for the flow of electrons between electrodes.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 3, 2006


TRACY DOVE
PRIMARY EXAMINER
1/06